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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/752,253	12/30/2000	Stephen S. Selkirk	00-063-DSK	7458

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EXAMINER

HO, THANG H

ART UNIT	PAPER NUMBER
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2188

DATE MAILED: 08/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/752,253

Applicant(s)

SELKIRK ET AL.

Examiner

Thang H Ho

Art Unit

2188

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 May 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. Applicant is reminded of the duty to fully disclose information under 37 CFR 1.56.

Specification

2. Claims 1-12 are presented for examination.
3. The disclosure is objected to because of the following informalities:

On page 1,

Line 8, the recitation of “_____” should be changed to read --
60/212,389--;

Line 14, the recitation of “_____” should be changed to read --
09/751,635--;

Line 16, the recitation of “_____” should be changed to read --
09/884,294--;

Line 18, the recitation of “_____” should be changed to read --
09/800,714--;

Line 20, the recitation of “_____” should be changed to read --
09/751,772--;

Line 22, the recitation of “_____” should be changed to read --
09/752,071--; and

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Line 24, the recitation of “_____” should be changed to read --

09/751,641--.

Appropriate correction is required.

4. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is required in correcting any errors of which applicant may become aware in the specification. Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-2, 5-8 and 11-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Thatte, United States Patent 5,008,786.

As per **claims 1 and 7**, Thatte teaches the system and method for recovery of compromised instances of virtual mapping systems [*i.e., recovery of virtual pages in an event of a page fault caused by a system failure (column 6, lines 27-47)*] as claimed, comprising: identification means for identifying a plurality of physical data elements for which mapping has been compromised [*page table is used to keep track of the location of virtual memory pages and to locate pages on disk when a page fault occurs (column 16, lines 53-56 and column 18, lines 37-46)*]; determination means for determining whether anchor points exist for the plurality of physical data elements [*timestamps or state bits*

are used to distinguish between pages that belong to the last checkpoint state and pages that do not (FIGS. 4-7, Table I, column 13, lines 8-10 and column 18, lines 64-66)]; first processing means for processing anchor points to find data elements in managed order [page table] if anchor points exist [page table is used to keep track of the location of virtual memory pages and to locate pages on disk when a page fault occurs (column 16, lines 53-56 and column 18, lines 37-46)]; and second processing means for processing each element found [when a page fault occurs, pages are read into memory allowing the restoration of memory to be rolled back to the checkpoint state (Abstract, column 6, lines 33-35)].

As per **claims 2 and 8**, Thatte teaches that the managed order data elements with sequential addresses [*siblings can be stored in adjacent blocks or scattered randomly over the disk (column 12, lines 61-64, column 18, lines 53-60)*].

As per **claims 5 and 11**, it is inherent that the means for finding data elements in physical space if anchor points do not exist [*i.e., reloading from the main storage if pages are not found from the page table (column 18, lines 37-41)*].

As per **claims 6 and 12**, Thatte teaches that the means for finding data elements in physical space comprises at least one of a sequential scan, random entry, and a binary search [*column 18, lines 37-60*].

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 3 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thatte, United States Patent 5,008,786 in view of Michels et al., United States Patent 6,549,519 (hereinafter Michels).

As per **claim 3 and 9**, Thatte teaches the system and method substantially as claimed including the locating of the pages on disk from a managed order [*Thatte, page table*] through hashing and searching techniques [*Thatte, column 18, lines 37-46*]. However, Thatte does not specifically teach that the managed order comprises data elements that are sorted by address. Michels teaches that lookup table including addresses that are maintained in sorted order (e.g., ascending or descending order) can be used to quickly and efficiently search through address lookup tables [*Michels, Abstract, column 2, lines 43-60*]. Accordingly, it would have been prima facie obvious for one skilled in the art at the time the invention was made to combine Thatte's and Michels' teachings to sort the addresses located within the page table to facilitate searching as pointed out by Michels on column 2, lines 58-60.

9. Claims 4 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thatte, United States Patent 5,008,786 in view of Matthews et al., United States Patent 6,105,115 (hereinafter Matthews).

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As per **claims 4 and 10**, Thatte teaches the system and method substantially as claimed including the locating of the pages on disk from a managed order [*Thatte, page table*] through hashing and searching techniques [*Thatte, column 18, lines 37-46*]. However, Thatte does not specifically teach that the managed order comprises data elements that are sorted by query frequency. Matthews teaches a system and method for sorting the data elements by query frequency, wherein entries within LRU table are sorted and replaced according to LRU and NRU algorithms, to reduce the size and complexity of the LRU table and to improve the speed of searching for the NRU line because the processor need only search the relatively small LRU region for the NRU line rather than the entire array [*Matthews, column 2, line 65 through column 3, line 43*]. Accordingly, it would have been prima facie obvious for one skilled in the art at the time the invention was made to combine Thatte's and Matthews' teachings to sort the entries within the page table by query frequency for the reasons set forth above.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See Form PTO-892.

11. Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

Or faxed to (703) 872-9306

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Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA. Sixth Floor (Receptionist).

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thang H Ho whose telephone number is 703-305-1888. The examiner can normally be reached on Monday-Friday from 7:00 A.M. - 3:30 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mano Padmanabhan can be reached on 703-306-2903. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Thang Ho
Art Unit 2188
July 19, 2004

Mano Padmanabhan
7/22/04

MANO PADMANABHAN
SUPERVISORY PATENT EXAMINER